Specification for a Direct Metal Laser-Sintering Machine

Technical Services in the Engineering Directorate at NASA Langley Research Center is in need of a Direct Metal Laser-Sintering Machine. The machine will be used to build research hardware. This technology gives the engineers the ability to make hardware that could not be built by conventional machining.

Requirements:
-Shall manufacture parts by selective laser melting technology, which produces homogeneous, fully dense metal components using powder base materials by an additive, layer-by-layer process.
-Shall manufacture fully dense end-use metal parts requiring no post-cure process.
-Shall build parts within a tolerance of +/-.005.
-Shall build parts with minimal wall thickness of 180 um
-Shall include build parameters for manufacturing parts out of Aluminum, Stainless Steel, Cobalt Chrome, Inconel and Titanium in one machine.
-Shall have an open software architecture to enable the user to modify the system parameters to meet a variety of hardware manufacturing needs.
-Shall have a build volume at least 280 x 280 x 350 mm.
-Shall have the capability to build in variable layer thicknesses from 20-100 um.
-Shall have a 400 watt Fiber laser.
-Shall have the capability to run two laser systems, including a 1000 watt laser.
-Shall have a removable powder box for quick change out of metal powders.
-Shall have a fully enclosed stand alone powder sieving system with ultrasonic cleaning.
-Shall have an integrated fire suppression system.
-Shall have an electronic visual inspection system to detect the powder preparation, layers, and performance.
-The system shall be able warn the user of issues over a network connection.
-Driving software shall run on a Windows 7 Operating System, import .stl files, and generate any necessary support structure.
-Shall have Ethernet Network connection.
-Shall include shipping, installation, machine set-up, and training
-Shall include a 24 month warranty that covers of all parts, including the laser with no limit on hours, labor, and travel for the repairs.

Options:
Additional removable powder boxes for quick change out of metal powders.